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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/565,534

03/01/2006

Kouhei Ohnishi

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EXAMINER

ORTIZ RODRIGUEZ, CARLOS R

ART UNIT

PAPER NUMBER

2123

MAIL DATE

DELIVERY MODE

03/11/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/565,534	Applicant(s) OHNISHI ET AL.	
	Examiner CARLOS ORTIZ RODRIGUEZ	Art Unit 2123	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 May 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-3 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>4/03/06, 5/25/06</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Specification

1. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

Claim Objections

2. Claim 1 objected to because of the following informalities: The term "the basis" (Line 5) should be "a basis". Appropriate correction is required.
3. Claim 3 objected to because of the following informalities: The term "the basis" (Lines 40 and 43) should be "a basis". Appropriate correction is required.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 1-3 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Rejection under 35 U.S.C. 112, second paragraph, as having insufficient antecedent basis:

- a. Claim 1 line 5, recites the limitation "the basis".
Claim 1 line 9-10, recites the limitation "the goal force signal".
Claim 1 line 11, recites the limitation "the goal position". There is insufficient antecedent basis for this limitation in the claim.
- b. Claim 2 lines 1-2, recites the limitation "the object".
Claim 2 lines 7-8, recites the limitation "the reaction force". There is insufficient antecedent basis for this limitation in the claim.
- c. Claim 3, recites the limitation "the operation force" (Line 5), "the reaction force" (Line 6), "the position" (Line 10), "the driving signal" (Line 15), "the sum" (Line 31), "the first and second acceleration signals" (Lines 28-29), "the third and fourth acceleration signals" (Line 33), and "the said second and fourth acceleration control signals" (Line 37-38). There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

5. Claims 1-3 are rejected under 35 U.S.C. 102 (e) as being anticipated by Nowlin et al. U.S. Patent No. 6,879,880 (hereinafter Nowlin).

a. Regarding claims 1-3 please note that the term “estimating/estimated” as utilized throughout the claims is being interpreted as “making an approximate calculation”.

b. **Regarding claim 1**, Nowlin discloses a position/force control device, comprising; (i) position detection means for detecting the position of an object (this feature is intrinsic to servo motors, see for example C1 L56-67 and C10

L12-27); (ii) driving means for driving the said object (this feature is intrinsic to servo motors, see for example C1 L56-67 and C10 L12-27); (iii) reaction force detection means for estimating reaction force which the object receives (see for example C10 L1-11, tactile feedback-force feedback relation) , on the basis of a position signal outputted from the said position detection means and a driving signal applied to the driving means (C9 L40-67 and C10 L1-11) ; and (iv) control means for estimating a first acceleration signal from the reaction force which the object undergoes and the goal force signal, and further estimating a second acceleration signal from the position signal and the goal position, and outputting the driving signal to said driving means on the basis of said first and second acceleration signals (see for example C9 L40-67 and C10). *Please note the disclosed basic master/slave scheme and the generic control systems theory, regarding calculating error signals based on the difference between the actual position and “desired positions”.*

c. **Regarding claim 2**, Nowlin discloses a position/force control device for controlling the position of the object and force on the object in response to position command signals and force command signals, comprising; (i) driving means for driving the said object (this feature is intrinsic to servo motors, see for example C1 L56-67 and C10 L12-27); (ii) position detection means for detecting a position of the object (this feature is intrinsic to servo motors, see for example C1 L56-67 and C10 L12-27); (iii) reaction force detection means for estimating

the reaction force undergone by the object from an acceleration signal estimated from a position signal outputted by the position detection means and from a driving signal transmitted to the driving means(see for example C10 L1-49, tactile feedback-force feedback relation); (iv) first calculation means for estimating a deviation between a position command signal and a position signal outputted by the position detection means and converting the deviation signal to a first acceleration signal (see for example C9 L40-67 and C10, *please note the disclosed basic master/slave scheme and the generic control systems theory, regarding calculating error signals based on the difference between the actual position and "desired positions"*); (v) second calculation means for estimating a deviation between the reaction force detected by the reaction force detection means and a force command signal and converting the deviation signal to a second acceleration signal; and (vi) control means for adding the said first and second acceleration signals and outputting the driving signal to the driving means (C9 L40-67, C10 and C15 L40-65). *Please note that position, velocity and acceleration are all mathematically related, requiring only basic mathematically manipulations to derive one from the other.*

d. **Regarding claim 3**, Nowlin discloses a position/force control device for controlling positions of an object on a slave side and of an operation part on a master side in response to a position difference between the operation part on the master side and the object on the slave side to drive the object with driving

force in response to the operation force on the master side and transmit the reaction force of the slave side to the master side (C10 L1-11), comprising; (i) first driving means for driving the operation part on the master side (this feature is intrinsic to servo motors, see for example C1 L56-67 and Figures 9A-9C); (ii) first position detection means for detecting the position of the operation part on the master side (this feature is intrinsic to servo motors, see for example C1 L56-67 and C10 L12-27); (iii) first reaction force detection means for estimating reaction force acted on the said operation part from an acceleration signal estimated from a position signal outputted by the first position detection means and from the driving signal transmitted to the said first driving means; (iv) second driving means for driving the object on the slave side; (v) second position detection means for detecting the position of the object on the slave side; (vi) second reaction force detection means for estimating the reaction force undergone by the object from an acceleration signal estimated from the position signal outputted by the said second position detection means and from the driving signal transmitted to the said second driving means (see for example Figures 9A-9C, C1 L56-67 and C10 L1-49, tactile feedback-force feedback relation); (vii) first calculation means for estimating a difference between the position signal outputted by the said first position detection means and the position signal outputted by the said second position detection means and converting the said difference to the first and second acceleration signals for controlling the master side and the slave side; (viii) second calculation means for estimating the sum of

outputs of said first and second reaction force detection means, and converting the said sum to the third and fourth acceleration signals for controlling the master side and the slave side; (ix) first addition means for adding the said first and third acceleration control signals; (x) second addition means for adding the said second and fourth acceleration control signals (see for example C9 L40-67 and C10, *please note the disclosed basic master/slave scheme and the generic control systems theory, regarding calculating error signals based on the difference between the actual position and "desired positions"*); (xi) first control means for outputting the driving signal to the operation part on the master side on the basis of the output of the said first addition means; and (xii) second control means for outputting a driving signal to the object on the slave side on the basis of an output of the said second addition means (C9 L40-67, C10 and C15 L40-65). *Please note that position, velocity and acceleration are all mathematically related, requiring only basic mathematically manipulations to derive one from the other.*

Citation of Pertinent Prior Art

6. Applicant is respectfully requested to fully consider all the references, in entirety, that appear on the attached list (Form PTO-892). These references disclose subject matter similar to that of applicant's disclosure and may be relied on in a future response to Applicant's remarks or amendments.

Please note below a list of the patents that appear on the Form PTO-892 including their relevance to the instant application.

- a. U.S. Patent No. 6,436,107 to Wang et al., which discloses an instrument with a pair of handles that can be controlled by an operator (see C8-C12, C16 L50-67, C17 L5-25, C22 L40-67 and C30 L48-67).
- b. U.S. Patent No. 6,671,581 to Niemeyer et al. which discloses a master/slave scheme (see Abstract, C4 L55-63, C5, C6 L13-22, C7 L25-26, C10, C12 L1-2, C14, C17 L20-25, C25 L48-55 and C29).
- c. U.S. Patent No. 6,915,878 to Kamen et al., which discloses reaction force control.
- d. U.S. Patent No. 7,118,582 to Wang et al., which discloses robotic control involving master/slave control and motor position control.

Please note below a list of the publications that appear on the Form PTO-892 including their relevance to the instant application.

- e. U.S. Pub. No. 2002/0121394 to Kamen et al., which discloses velocity and acceleration control.

- f. U.S. Pub. No. 2003/0004610 to Niemeyer et al., which discloses master/slave control of a surgical robotic system.
- g. U.S. Pub. No. 2003/0132965 to Santori et al., which discloses control of an inverted pendulum utilizing a host computer as a master side and the pendulum servos as the slave side (see for example Paragraphs 0123-0130 and Fig 6).
- h. U.S. Pub. No. 2005/0043718 to Madhani et al., which discloses control of reaction force and a master/slave scheme (see for example, Paragraphs 0014, 0017, 0033-0034, 0192-0202 and 0246).

Conclusion

- 7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Carlos Ortiz-Rodriguez whose telephone number is 571-272-3766.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul Rodriguez can be reached on 571-272-3753. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2123

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Carlos Ortiz-Rodriguez
Patent Examiner
Art Unit 2123

March 16, 2008

/Paul L Rodriguez/
Supervisory Patent Examiner, Art Unit 2123